

AMENDMENTS TO THE SPECIFICATION:

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/EP 2005/050117
filed on January 13, 2005.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0001] with the following amended paragraph:

[0001] ~~Prior Art~~ **Field of the Invention**

Please replace paragraph [0002] with the following amended paragraph:

[0002] The invention is based on a fuel injection apparatus for an internal combustion engine
~~according to the preamble to claim 1.~~

Please add the following new paragraph after paragraph [0002]:

[0002.5] Description of the Prior Art

Please replace paragraph [0003] with the following amended paragraph:

[0003] A fuel injection apparatus ~~of this kind is~~ known from the literature, for example
Dieselmotor-Management, Verlag Vieweg, 2nd ed. 1998, pp. 280 – 284[.] ~~This fuel~~
~~injection apparatus~~ has a high-pressure pump that supplies fuel into a reservoir[.] ~~The~~
~~reservoir is~~ connected to injectors associated with the cylinders of the internal combustion
engine. The high-pressure pump is preceded by a fuel filter that filters out impurities from
the fuel to prevent them from damaging the high-pressure pump. The fuel filter also
separates out free-floating water contained in the fuel and/or emulsified water, i.e. water that
is mixed with fuel. The fuel filter has a collecting chamber for the separated water, which

must be emptied from time to time. When there is a lot of water in the fuel, it may be necessary to empty the collected water after only a few hundred kilometers of driving. The separated water must also be disposed of in an environmentally responsible way because it is sometimes mixed with fuel.

Please replace paragraph [0004] with the following amended paragraph:

[0004] ~~Advantages of the Invention~~

SUMMARY AND ADVANTAGES OF THE INVENTION

Please replace paragraph [0005] with the following amended paragraph:

[0005] The fuel injection apparatus according to the present invention~~[[,]] with the defining characteristics of claim 1,~~ has the advantage over the prior art that water separated out by the fuel filter does not require costly disposal, but is instead used in the combustion of the engine. Supplying water to the combustion process can also achieve advantages with regard to increased power, reduced emissions, and reduced thermal load on the engine.

Page 2, please replace paragraph [0006] with the following amended paragraph:

[0006] ~~The dependent claims disclose advantageous~~ **Advantageous** embodiments and modifications of the fuel injection apparatus according to the present invention **are disclosed**.
[[The]] **One** embodiment ~~according to claim 2~~ permits the supplied water to be dispersed in the aspirated combustion air, **while another** ~~[[.]] The embodiment according to claim 3~~ makes it possible for the supplied water to be delivered in the form of a fine spray. [[The]] **A further** embodiment ~~according to claim 4~~ prevents the supplied water from settling in the intake region, **while in another** ~~[[.]] In the embodiment according to claim 5,~~ the water is

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subjected to the pressure generated by the fuel supply pump and can therefore be delivered without requiring an additional pump. ~~The embodiment according to claim 9 prevents unwanted~~ **Unwanted** torque increase **may be prevented** from occurring when the engine is in overrunning mode **or during water delivery, and** ~~[[.]] The embodiment according to claim 10 prevents icing~~ **may be prevented** from occurring in the intake region. ~~The embodiment according to claim 12 can prevent torque increase from occurring in the engine during water delivery.~~

Please replace paragraph [0007] with the following amended paragraph:

[0007] Drawings **BRIEF DESCRIPTION OF THE DRAWINGS**

Please replace paragraph [0008] with the following amended paragraph:

[0008] Several exemplary embodiments of the invention are ~~shown in the drawings and explained in greater detail in the description below~~ **described more fully herein below, in conjunction with the drawings, in which:**

Please replace paragraph [0009] with the following amended paragraph:

[0009] Fig. 1 schematically depicts a fuel injection apparatus for an internal combustion engine **according to the invention,**

Please replace paragraph [0010] with the following amended paragraph:

[0010] Fig. 2 is an enlarged depiction of ~~[[a]]~~ **the** fuel filter of the fuel injection apparatus, and

Page 3, please replace paragraph [0012] with the following amended paragraph:

[0012] ~~Description of the Exemplary Embodiments~~

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Page 4, please replace paragraph [0016] with the following amended paragraph:

[0016] According to the present invention, free-floating and/or emulsified water separated out by the fuel filter 26 is supplied to the combustion chamber 40 of the cylinder 6. To this end, the collecting chamber 36 of the fuel filter 26 is connected to the intake region 44 of the cylinder 6, for example, via a line 48 so that water is supplied to the combustion air that is then sucked in by the cylinder 6. Preferably, a nozzle 50 or an injection valve delivers the water into the intake region 44 in spray form in order to achieve a uniform mixture with the combustion air. Preferably, the water is delivered into the intake region 44 directly at the injection valve 42 or only a slight distance upstream of it. The line 48 contains an on-off valve 52 triggered by the control unit 22. Preferably, the on-off valve 52 is controlled as a function of operating parameters of the engine and/or as a function of the quantity of water present in the collecting chamber 36 of the fuel filter 26. In a multicylinder internal combustion engine, it is alternatively possible for the water to be supplied to the intake region 44 of only one cylinder or to the intake regions of all of the cylinders. A shared on-off valve 52 can be provided for a shared line 48 to all of the cylinders of the engine, which line branches to the separate intake regions of the cylinders only after the on-off valve 52, or a separate on-off valve 52 can be provided for the intake region 44 of each cylinder. ~~It is also~~

~~possible for the water separated in the fuel filter 26 to be supplied to the intake region of only one cylinder of the engine.~~

Page 5, please replace paragraph [0017] with the following amended paragraph:

[0017] The quantity of water present in the collecting chamber 36 can be detected, for example, by a conductivity sensor 54 that is connected to the control unit 22. The control unit 22 opens the on-off valve 52 only if it has determined from the signal of the sensor 54 that water is present in the collecting chamber 36. Additional sensors 56 are provided to detect operating parameters of the engine, for example to detect the load state, the crank angle, the temperature, and possibly other parameters. For example, the control unit 22 opens the on-off valve 52, thus supplying water into the intake region 44, only when the engine is not in overrunning mode, i.e. **not** at zero load, and when the inlet valve 42 is open. This assures that no injection of fuel mixed with water occurs in overrunning mode, which would lead to an unwanted increase in the torque of the engine and assures that the supplied water is sucked directly into the combustion chamber 40 and is not deposited in the intake region 44.

Page 8, please add the following new paragraph after paragraph [0031]:

[0032] The foregoing relates to a preferred exemplary embodiment of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.